

ארץ זבת חלב, דבש ונוגדי-חמצון

מקורות רעננים לצמחים אנטי-  
אוקסידנטים בגידול אורגני

כל הזכויות על מידע מקורי במצגת זו שמורות לפרץ גן ול"על עלים – מרכז לצמחי מרפא" בע"מ. אין להעתיק או להציג מצגת זו או חלקים ממנה ללא קבלת רשות מפורשת בכתב.



פרץ גן



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גורמים להצלחות בייצור AO בישראל

**אגרוטכניקה**

**שילוב של זנים עתירי AO**

**טכנולוגית המיצוי**

**(2010) Nutrition Journal**

**The total antioxidant content of more than 3100 foods, beverages, spices, herbs and supplements used worldwide**

**Monica H Carlsen, Bente L Halvorsen, [...], and Rune Blomhoff**

Herbal/traditional plant medicine

“This is the most antioxidant rich category in the present study .... Half of the products have antioxidant values above the 90th percentile of the complete Antioxidant Food Table and the mean and median values are 91.7 and 14.2 mmol/100 g, respectively. “

## 20 Common Foods With the Most Antioxidants

Rank	Food item	Serving size	Total antioxidant capacity per serving
		Half cup	13,727
1	Small Red Bean (dried)	1 cup	13,427
2	Wild blueberry	Half cup	13,259
3	Red kidney bean (dried)	Half cup	11,864
4	Pinto bean	1 cup	9,019 8,983
5		1 cup (whole)	7,904 7,701
6	Blueberry (cultivated)	1 cup (hearts)	7,291 6,058
7	Cranberry	1 cup	
8	Artichoke (cooked)	Half cup	
9	Blackberry	1 cup	
10	Prune		
	Raspberry		

11	Strawberry		1 cup	5,938
12	Red Delicious	apple	1 whole	5,900
13	Granny Smith	apple	1 whole	5,381
14	Pecan	Sweet cherry	1 ounce	5,095
15	Black plum	Russet	1 cup	4,873
16	potato (cooked)	Black	1 whole	4,844
17	bean (dried)	Plum Gala	1 whole	4,649
18	apple		Half cup	4,181
19			1 whole	4,118
20			1 whole	3,903

USDA DATA, The Journal of Agricultural and Food Chemistry, June 2004.

## Antioxidant content mmol/100 ga)

Allspice, dried ground	100.4
Basil, dried	19.9
Bay leaves, dried	27.8
Cinnamon sticks and whole bark	26.5
	77.0
Cinnamon, dried ground	277.3
Clove, dried, whole and ground	20.2
Dill, dried ground	43.8
Estragon, dried ground	20.3
Ginger, dried	116.4
Mint leaves, dried	26.4
Nutmeg, dried ground	63.2
Oregano, dried ground	44.8
Rosemary, dried ground	44.5
Saffron, dried ground	17.5
Saffron, dried whole stigma	44.3
Sage, dried ground	56.3
Thyme, dried ground	

## שיטות להערכת ריכוז AO

the 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid (Trolox)

the equivalent antioxidant capacity (TEAC)

the ferric-reducing ability of plasma (FRAP)

the oxygen radical absorbance capacity (ORAC)



**התכולה הכללית של A בצמח  
(או במזון מסוים)  
אינה מבטאת בהכרח את התועלת  
המופקת ממנו**

*Rubus idaeus*

פטל אדום



דף חדשות  
פטל שגדל בחורף בישראל נמכר באירופה ב-17 יורו לקילו

במכון וולקני מציינים כי גידול הפטל יחזיר את ההשקעה תוך  
שלוש שנים ושיג תשואה של 47% להשקעה

Based on phenolic compounds concentration the investigated berry species may be ranked as follows:

Aronia melanocarpa

Sambucus nigra L.

Ribes nigrum L.

Rubus occidentalis L.

Rubus idaeus L.

Hippophae rhamnoides

Chemical Composition and Antioxidant Activity of Small Fruits

Pranas Viskelis, et al., Institute of Horticulture, Lithuanian Research Centre for Agriculture and Forestry , Lithuania



סמבוק שחור Sambucus nigra



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Lycium chinensis  
אטד סיני



Levels of lutein and its accompanying molecule zeaxanthin naturally occurring in various fruits and vegetables.†

Popcorn (air popped) 23.7 / 1 cup	20.4 / 1 cup
Turnip greens (cooked) 12.2 / 1 cup	
Collards (cooked)	
Green peas (cooked)	4.1 / 1 cup
Spinach (raw)	3.7 / 1 cup
Corn (cooked)	1.5 / 1 cup
Broccoli (raw)	1.3 / 1 cup
Romaine lettuce (raw)	1.1 / 1 cup
Green beans (cooked)	0.9 / 1 cup
Broccoli (cooked)	0.8 / 1/2 cup
Papaya (raw)	0.2 / 1 large
Egg	0.2 / 1 large
Orange (raw)	

† U.S. Department of Agriculture, Agricultural Research Service

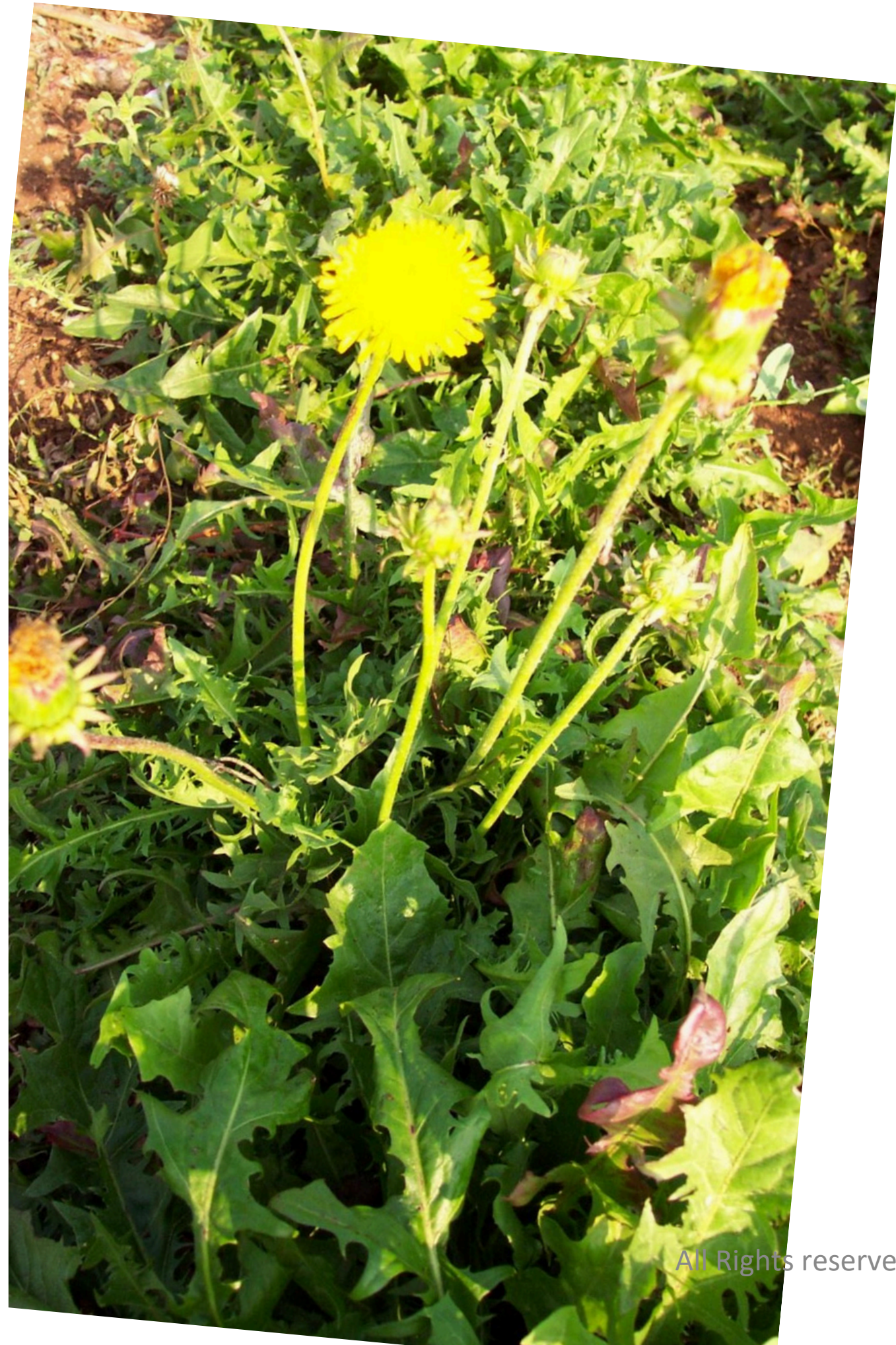
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## Foods highest in Lutein + Zeaxanthin

16	Chicory greens, raw	89,569				
35	Dandelion greens, raw	60,488				
42	Chrysanthemum	34,666				
45	Parsley, raw	30,900				
.						
47	Lettuce, cos or romaine, raw	27,201				
63	Bitter gourd, leafy tips, cooke	16,484				
SOURCE: <a href="http://nutritiondata.self.com/foods-011138000000000000000000-1.html?#ixzz2nTlb2Wit">http://nutritiondata.self.com/foods-011138000000000000000000-1.html?#ixzz2nTlb2Wit</a>						



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Padma S. Vankar: Effectiveness of Antioxidant Properties of Fresh and Dry Rhizomes of *Curcuma longa* (Long and Short Varieties) with Dry Turmeric Spice

מסקנות  
 מיצוי מימי של קנה שורש טרי הראה תכונות נוגדות  
 חמצון חזקות יותר מאשר מיצוי של קנה שורש יבש  
 בטחינה לאבקה (שורש יבש) יש איבוד משמעותי של  
 תכונות נוגדות חמצון

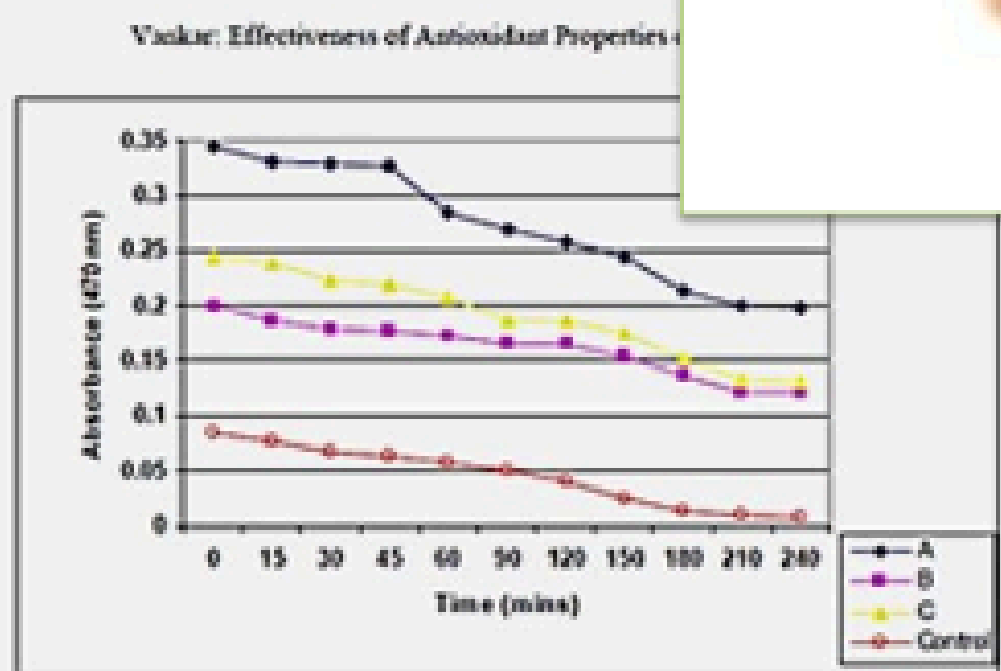


Figure-4  $\beta$ -Carotene bleaching test for dry and fresh curcuma short, long and dry powder. (A - curcuma short rhizome; B - curcuma long rhizome; C- dry spice, powder)



## מחקרים השוואתיים בין קנה שרש כורכומה טרי ליבש

1. Comparative study of chemical composition and antioxidant activity of fresh and dry rhizomes of turmeric (*Curcuma longa* Linn.).

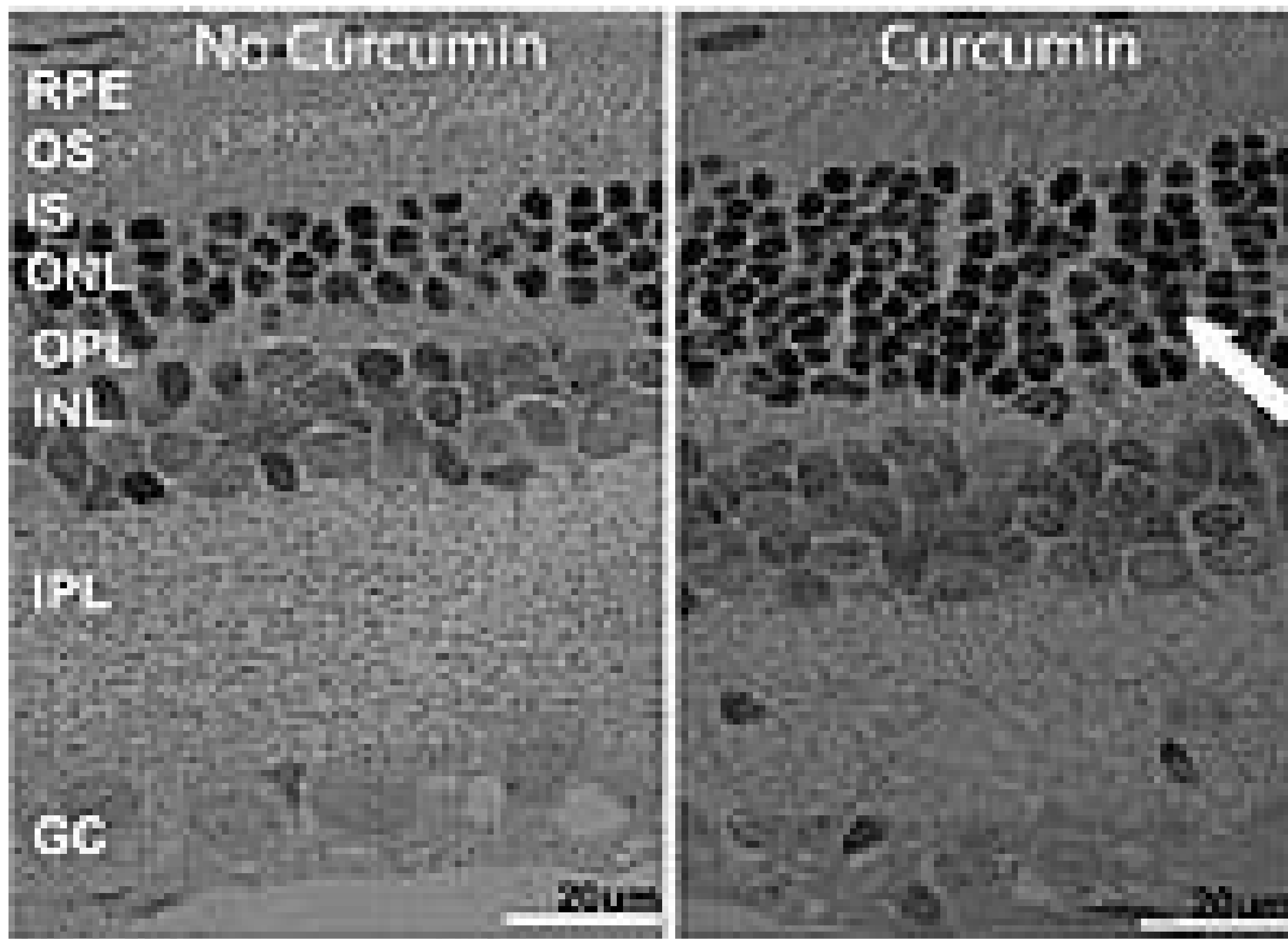
G. Singh , I.P.S. Kapoor ,Pratibha Singh Carola S. de Heluani ,Marina P. de Lampasona and César A.N. Catalán. September 2009

2. Review on some plants of Indian traditional medicine with antioxidant activity.

Paolo Scartezzini and Ester Speroni. August 1999

3. Antioxidant capacity of fresh and dried rhizomes from four clones of turmeric) *Curcuma longa* L.) grown in vitro.

M. Cousins, J. Adelberg F. Chen and J. Rieck. April 2006.



Vasireddy et al. "Rescue of Photoreceptor Degeneration by Curcumin in Transgenic Rats with P23H Rhodopsin Mutation." PLoS ONE, June 2011, vol. 6(6), pp. e21193



**Cynara cardunculus**

**ארטישוק**



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Biological Characterization of *Cynara cardunculus* L.  
 Methanolic Extracts: Antioxidant, Anti-proliferative, Anti-migratory and  
 Anti-angiogenic Activities. Zélia Velez et al., 2012

Table 1. Total phenolic contents (mg/g Cc DM)

Leaves	Dry	Cultivated	7.31
	Green	Wild	5.22
Stalks	Dry	Cultivated	9.25
	Green	Wild	5.56
		Cultivated	2.86
		Wild	2.88
Inflorescences		Cultivated	0.66
		Wild	0.67
		Cultivated	4.06
	Dry	Wild	3.58
	Green	Cultivated	
	Wild	2.62	
		1.20	



גוטו קולה  
Centella asiatica





**Mucuna pruriense**

**מוקונה**

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Brazilian Journal of Pharmaceutical Sciences  
Braz. J. Pharm. Sci. vol.47 no.3 São Paulo July/Sept. 2011

## In vitro evaluation of *Mucuna pruriens* (L.) DC. antioxidant activity

Joy Ganem Longhil; Elisa PerezII; Jair José de LimaIII; Lys Mary Bileski CândidoI, IV,  
\*

I Pharmacy Department (PPGCF), Federal University of Paraná

II Chemistry Department, Federal University of Paraná, 3 Nutrition Department,  
Federal University of Paraná, 4 Food Coordination, Technological Federal University  
of Paraná

**TABLE I - EC<sub>50</sub> values and anti-radical power (ARP) of selected antioxidant substances, *M. pruriens* black seeds acid extract and levodopa standard**

Antioxidant Substance	EC <sub>50</sub> (mg/mL)	ARP
BHA	0.47	2.11
Vitamin C	0.27	3.70
Alpha-tocopherol	0.26	3.85
Quercetin	0.09	10.95
Gallic acid	0.08	12.72
Acid extract of <i>Mucuna pruriens</i>	0.035	28.62
Levodopa standard	0.030	33.09

# Moringa oleifera

leaves contain  
crypto-chlorogenic acid  
and isoquercetin

as major active antioxidant constituents.

► Ethanol 70% was the efficient solvent  
for extracting the leaves of *M. oleifera*



Marula  
Sclerocarya birrea

Agric Food Chem. 2008 Nov 12;56(21):9884-91. **Phenolic antioxidants and antiatherogenic effects of Marula (*Sclerocarya birrea* Subsp. *caffra*) fruit juice in healthy humans.** Borochoy-Neori H, Judeinstein S, Greenberg A, Fuhrman B, Attias J, Volkova N, Hayek T, Aviram M.



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**Phyllanthus emblica**  
(syn. Emblica officinalis)

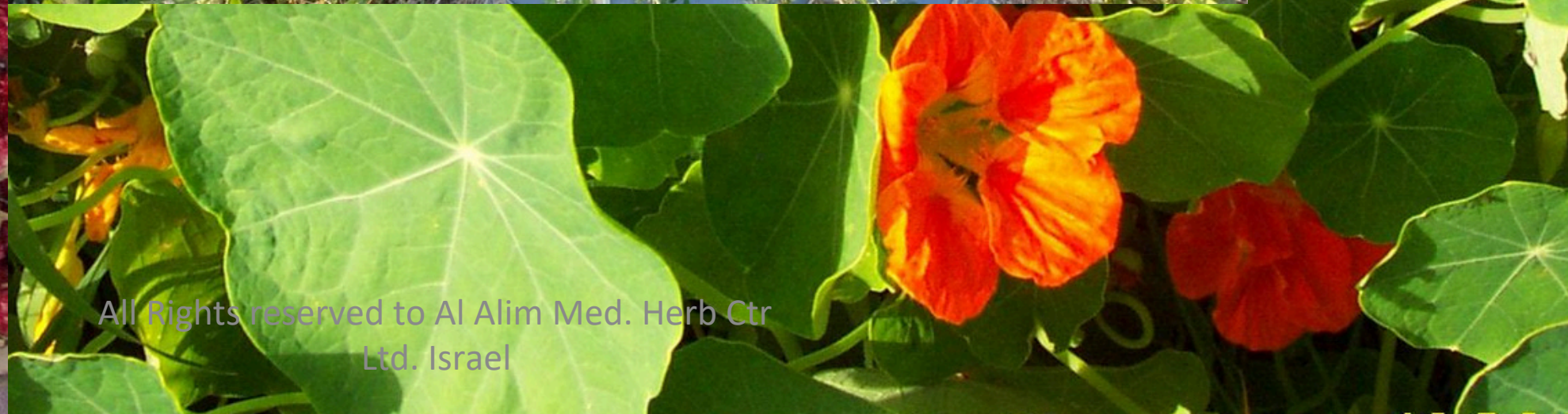


**Antioxidant  
content  
mmol/100 ga)**

<b>Amla (Indian gooseberry), dried</b>	<b>261.5</b>
Apples, dried	3.8



# פרחים אכילים

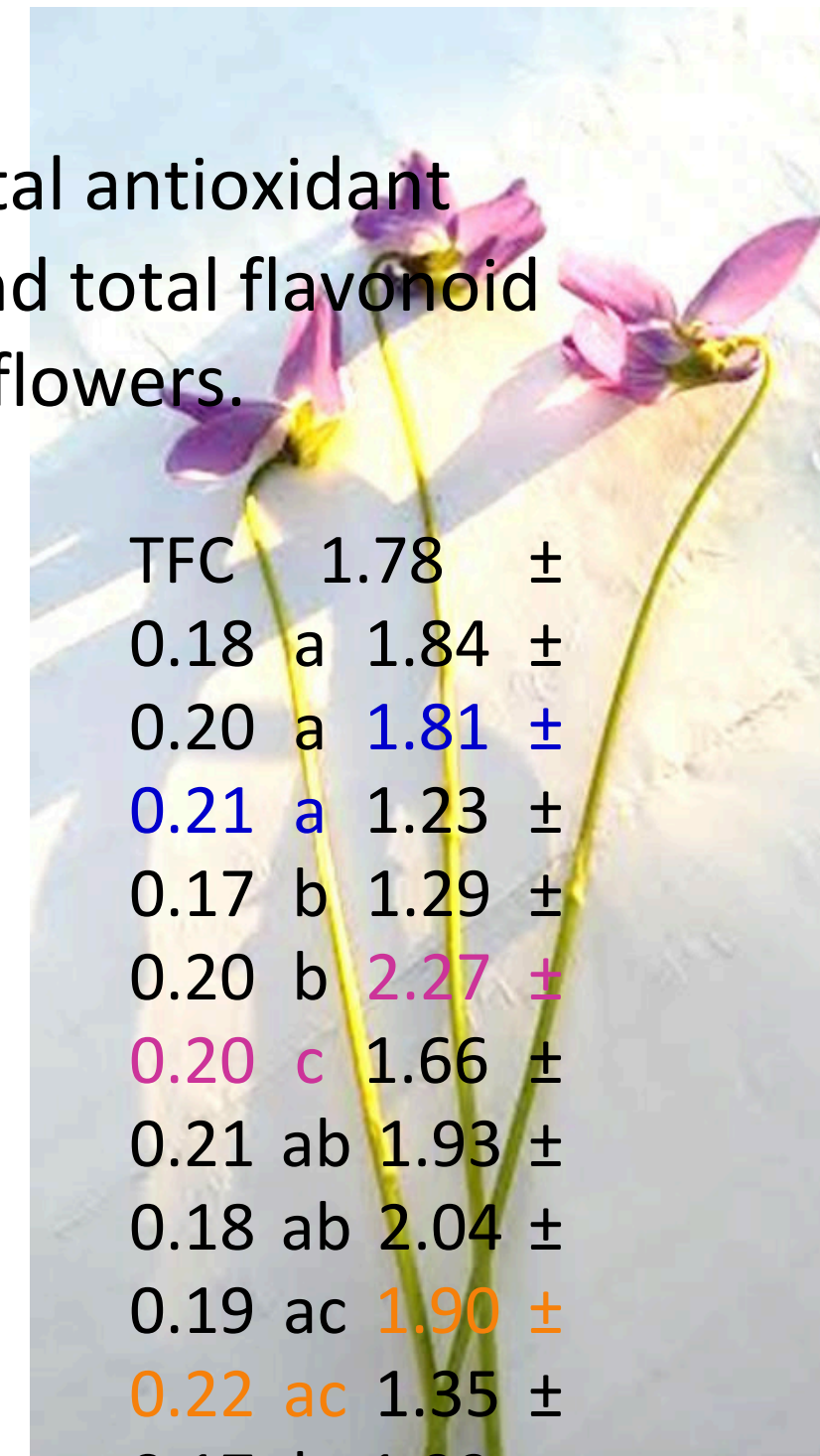


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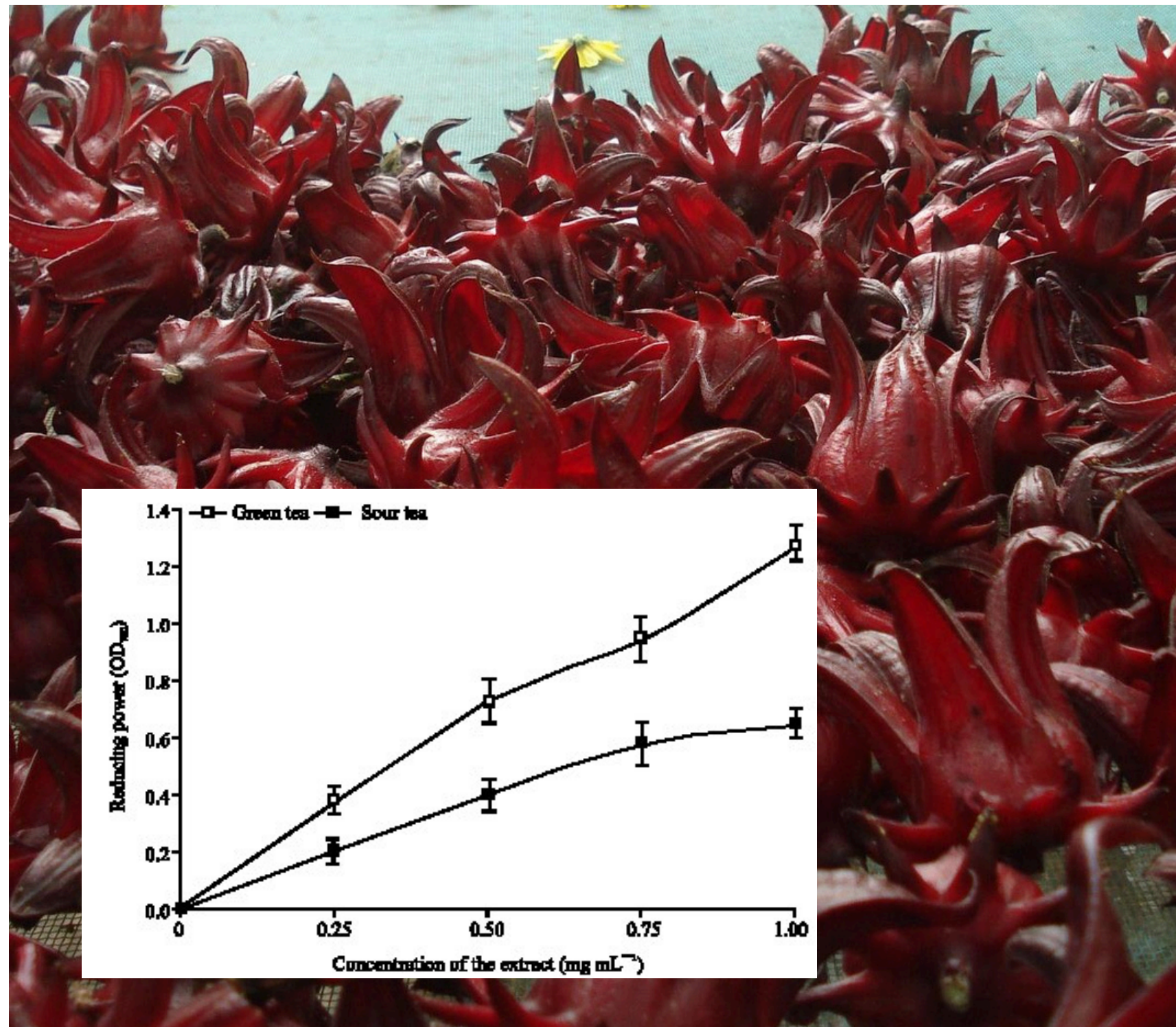
# Edible Flowers—A New Promising Source of Mineral Elements in Human Nutrition. Otakar et al., 2012

Total phenolic content (TPC) (g of gallic acid/kg of FM), total antioxidant capacity (TAC) (g of ascorbic acid equivalents/kg of FM) and total flavonoid content (TFC) (g of rutin/kg of FM) in 12 species of edible flowers.

Species	TPC	TAC	TFC
Antirrhinum majus	3.49 ± 0.21 a	4.92 ± 0.24 a	1.78 ± 0.18 a
Begonia boliviensis	0.16 b	4.76 ± 0.29 b	1.84 ± 0.20 a
<b>Centaurea cyanus</b>	<b>0.27 b</b>	<b>6.81 ± 0.26 b</b>	<b>1.81 ± 0.21 a</b>
Chrysanthemum frutescens	2.53 ± 0.25 c	4.24 ± 0.30 c	1.23 ± 0.17 b
Chrysanthemum parthenium	2.72 ± 0.27 c	4.21 ± 0.31 c	1.29 ± 0.20 b
<b>Dianthus caryophyllus</b>	<b>5.28 ± 0.41 b</b>	<b>6.96 ± 0.39 b</b>	<b>2.27 ± 0.20 c</b>
Fuchsia x hybrida	3.45 ± 0.30 a	5.20 ± 0.21 a	1.66 ± 0.21 ab
Impatiens walleriana	4.85 ± 0.28 b	6.89 ± 0.36 b	1.93 ± 0.18 ab
Rosa odorata	5.02 ± 0.34 b	6.85 ± 0.38 b	2.04 ± 0.19 ac
<b>Tagetes patula</b>	<b>4.58 ± 0.40 b</b>	<b>6.70 ± 0.37 b</b>	<b>1.90 ± 0.22 ac</b>
Tropaeolum majus	3.31 ± 0.29 a	5.12 ± 0.20 a	1.35 ± 0.17 b
Viola x wittrockiana	5.11 ± 0.37 b	6.65 ± 0.37 b	1.99 ± 0.23 ac







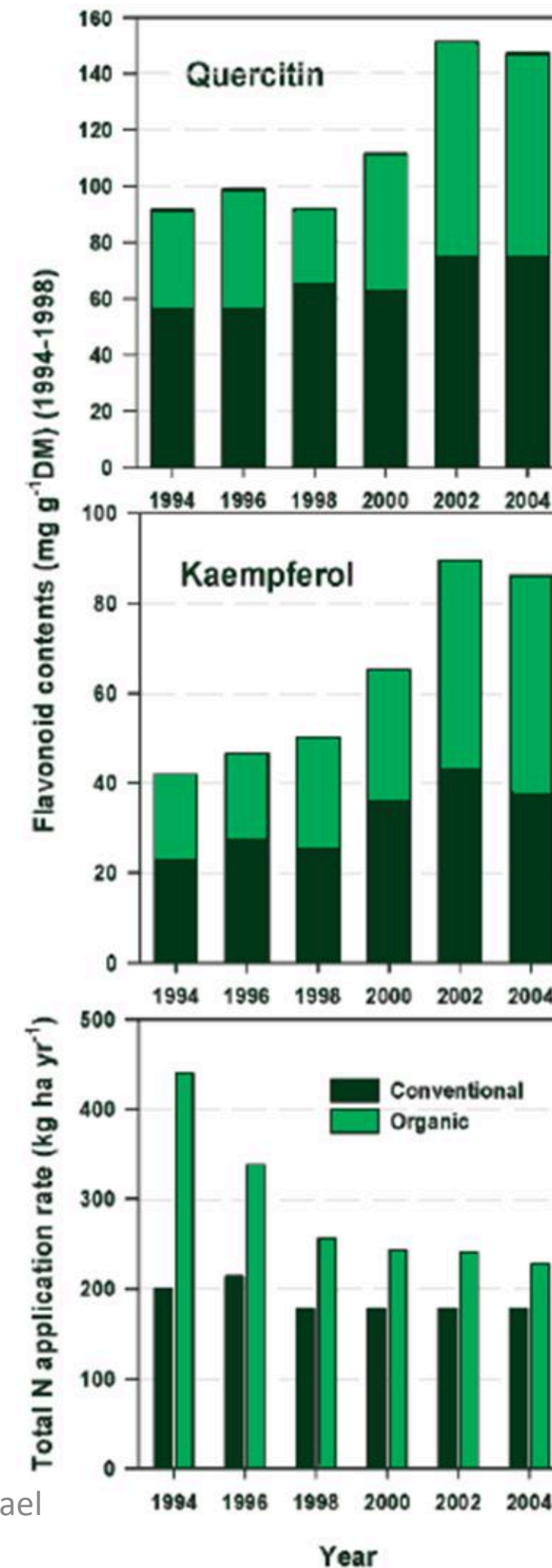
Ganiyu Oboh , 2009. The Neuroprotective Potentials of Sour (*Hibiscus sabdariffa*,Calyx) and Green (*Camellia sinensis*) Teas on Some Pro-Oxidants Induced Oxidative Stress in Brain. *Asian Journal of Clinical Nutrition*, 1: 40-49.

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האם יש חשיבות לגידול האורגני,  
מבחינת תכולת אנטי-אוקסידנטים בצמח?

# Organic Tomatoes Have More Flavonoid Compounds

Ten-Year Comparison of the Influence of Organic and Conventional Crop Management Practices on the Content of Flavonoids in Tomatoes  
ALYSON E. MITCHELL et al.





# תודה על ההקשבה!

כל הזכויות על מידע מקורי במצגת זו שמורות לפרץ גן ול"על עלים  
מרכז לצמחי מרפא" בע"מ. אין להעתיק או להציג מצגת זו או חלקים  
ממנה ללא קבלת רשות מפורשת בכתב.

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